IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES
Docket No. 15019US01

In the Application of:

     Darwin Rambo, et al.

Serial No.: 10/620,474

Filed: July 16, 2003

For: VOICE QUALITY ANALYSIS
       TECHNIQUE

Examiner: Qi Han

Group Art Unit: 2626

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BRIEF ON APPEAL

Mail Stop: Appeal Brief-Patents
Commissioner for Patents
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Sir:

     The Appellants present this Brief on Appeal to the Board of Patent Appeals and

Interferences. Based on the arguments presented in this Brief, reversal of the final

rejections to the pending claims of the present Application is requested.

REAL PARTY IN INTEREST

The real party in interest is Broadcom Corporation, a corporation organized under the laws of the state of California, and having a place of business at 5300 California Avenue, Irvine, California 92617. Broadcom Corporation is the assignee of the present Application.

RELATED APPEALS AND INTERFERENCES

Not Applicable.

STATUS OF THE CLAIMS

The present Application originally included 18 claims. Claims 1-10, 14, and 18 were cancelled and Claims 19-54 were added. Pending Claims 11-13, 15-17 and 19-54 stand rejected. The text of the pending claims is provided in the Claims Appendix.

STATUS OF THE AMENDMENTS

Subsequent to the final rejection mailed on November 20, 2009, no amendments were made.

SUMMARY OF CLAIMED SUBJECT MATTER

Independent Claim 11

Independent Claim 11 is directed to:

11.   A method of assessing voice quality of a communication system using a voice analysis platform comprising:

transmitting reference speech samples into said communication system;

receiving said reference speech samples captured at one or more processing points within a gateway of said communication system; and

determining voice quality scores based on said captured reference speech samples using said voice analysis platform.

Figures 1a, 1b, 3, and 5 illustratively describe a voice analysis platform used for assessing voice quality of a communication system. The present Application, at paragraph [23], further states that the "present invention may be found in a system and method to assess voice quality of a communication system." Furthermore, paragraph [24] describes how a voice analysis platform is used to assess the voice quality. For example, paragraph [24] states that "[t]he voice analysis platform provides streaming voice data in the form of one or more reference speech samples that are injected and captured at various points within a communication system. The capture points comprise outputs of one or more processing elements of the communication system. The reference speech samples may comprise prerecorded utterances that may be stored in a storage media of the voice analysis platform. It is contemplated that, in one embodiment, the utterances may be generated in one or more different languages. The voice analysis

3

platform utilizes one or more algorithms to generate a voice quality score from the captured voice data."

The subject matter of the first clause of Claim 11 is illustratively described in the present Application, at Figures 1a, 1b, 3, 4a, and 5, for example. These figures illustrate a first voice analysis platform transmitting a reference speech sample into a communication system. For example, paragraph [32] of the present Application states that "[i]n this embodiment, the voice analysis platform 304 transmits one or more reference speech samples to a first public services telephone network (PSTN) 308." Furthermore, Figure 4, at step 412, indicates that the reference speech sample is transmitted into the communication system.

The subject matter of the second clause of Claim 11 is illustratively described in the present Application, at Figures 3 and 5, for example. Figure 3, for example, illustrates one or more processing points within a gateway (i.e., a 1st echo canceller 312, a voice activity detector 320, a 1st codec 316, and a packetizer 324) for receiving the reference speech sample. Likewise, Figure 5 illustratively describes one or more processing points within a gateway used for receiving a reference speech sample generated by the first voice analysis platform.

The subject matter of the third clause of Claim 11 is illustratively described in the present Application, at Figure 5, for example, which shows the voice quality scores at the one or more processing points. Furthermore, the present Application, at paragraph [39], for example, states that "[t]he voice analysis platform 304 may subsequently generate one or more voice quality scores by comparing one or more of these outputs, containing the captured reference speech sample, to the originally transmitted reference speech sample."

Independent Claim 19

Independent Claim 19 is directed to:

19.   A system for monitoring degradation of voice quality in a communication system comprising:

a first voice analysis platform for transmitting reference speech through said communication system; and

a second voice analysis platform for receiving said reference speech transmitted through said communication system, said communication system comprising a plurality of signal processing elements used to process said reference speech, wherein a network interface is used to communicatively couple the outputs of said plurality of signal processing elements to said first voice analysis platform or said second voice analysis platform, wherein a reference speech sample obtained at an output of a signal processing element of said plurality of signal processing elements is transmitted through said network interface to said first voice analysis platform or said second voice analysis platform, said reference speech sample obtained at said output used to compute a voice quality score at said first voice analysis platform or said second voice analysis platform.

The present Application, at paragraph [24], for example, describes how aspects of the present invention provide for a system that monitors degradation of voice quality in a communication system. The present Application states that "[a]n exemplary monitor may display one or more voice quality scores corresponding to one or more points within the communication system. By assessing the voice quality score at the one or more points

within the communication system, the user is able to evaluate the performance after processing is performed by one or more processing elements of the communication system and subsequently isolate one or more network elements that may be responsible for causing a degradation in voice quality."

The subject matter of the first clause of Claim 19 is illustratively described in the present Application, at Figures 1a, 1b, 3, 4a, and 5, for example. The figures illustrate a first voice analysis platform transmitting a reference speech sample into a communication system. For example, paragraph [32] of the present Application states that "[i]n this embodiment, the voice analysis platform 304 transmits one or more reference speech samples to a first public services telephone network (PSTN) 308. Furthermore, Figure 4, at step 412, indicates that the reference speech sample is transmitted into the communication system.

The subject matter of the second clause of Claim 19 is illustratively described in the present Application, at Figures 1a, 3, and 5, for example, which illustrate the first second voice analysis platform receiving the reference speech transmitted by the first voice analysis platform. Figure 5 further describes the plurality of signal processing elements used to process the reference speech. Figure 5 further describes a network interface used for communicatively coupling the outputs of the plurality of signal processing elements to the first voice analysis platform or the second voice analysis platform. Furthermore, Figure 4 at step 420 further describes that a voice analysis platform processes the received speech sample. Furthermore, the present Application, at paragraph [39], for example, states that "[t]he voice analysis platform 304 may subsequently generate one or more voice quality scores by comparing one or more of

these outputs, containing the captured reference speech sample, to the originally transmitted reference speech sample."

Independent Claim 30

Independent Claim 30 is directed to:

30.   A system for monitoring degradation of voice quality in a communication system comprising:

a voice analysis platform for transmitting and receiving reference speech through said communication system, said communication system comprising a plurality of signal processing elements used to process said reference speech, said voice analysis platform receiving a reference speech sample from an output of a signal processing element of said plurality of signal processing elements, said reference speech sample transmitted to said voice analysis platform via a network interface, said network interface used for communicatively coupling said signal processing element to said voice analysis platform, said reference speech sample used to compute a voice quality score.

The present Application, at paragraph [24], for example, describes how aspects of the present invention provide for a system that monitors degradation of voice quality in a communication system. The present Application states that "[a]n exemplary monitor may display one or more voice quality scores corresponding to one or more points within the communication system. By assessing the voice quality score at the one or more points within the communication system, the user is able to evaluate the performance after processing is performed by one or more processing elements of the communication

system and subsequently isolate one or more network elements that may be responsible for causing a degradation in voice quality."

Claim 30 recites "a voice analysis platform for transmitting and receiving reference speech through said communication system." This portion of Claim 30 is illustratively described in the present Application, at Figures 1a, 1b, 3, 4a, and 5, for example. These figures illustrate a first voice analysis platform transmitting a reference speech sample into a communication system. For example, paragraph [32] of the present Application states that "[i]n this embodiment, the voice analysis platform 304 transmits one or more reference speech samples to a first public services telephone network (PSTN) 308. Furthermore, Figure 4, at step 412, indicates that the reference speech sample is transmitted into the communication system.

Claim 30 further recites "said communication system comprising a plurality of signal processing elements used to process said reference speech." The subject matter of the second clause of Claim 11 is illustratively described in the present Application, at Figures 3 and 5, for example. Figure 3, for example, illustrates one or more signal processing elements (i.e., a 1st echo canceller 312, a voice activity detector 320, a 1st codec 316, and a packetizer 324) for processing the reference speech sample. Likewise, Figure 5 illustratively describes one or more signal processing elements within used for processing a reference speech sample generated by the first voice analysis platform.

Claim 30 further recites "said voice analysis platform receiving a reference speech sample from an output of a signal processing element of said plurality of signal processing elements." This portion of Claim 30 is illustratively described in the present Application, at Figures 3 and 5, for example. Figure 3, for example, illustrates how a

first voice analysis platform receives a speech sample from an output of a signal processing element of a plurality of signal processing elements (i.e., a 1st echo canceller 312, a voice activity detector 320, a 1st codec 316, and a packetizer 324).

Furthermore, Figures 3 and 5 illustratively describe "said reference speech sample transmitted to said voice analysis platform via a network interface, said network interface used for communicatively coupling said signal processing element to said voice analysis platform, said reference speech sample used to compute a voice quality score," as recited in Claim 30. Furthermore, the present Application, at paragraph [39], states that "a network interface 340 is illustrated on the transmit side of the voice communication system under test. The network interface 340 provides a communication interface between the exemplary processing elements previously described (i.e., ECAN 312, codec 316, VAD 320, and packetizer 324) and the voice analysis platform 304." The present Application, at paragraph [39], further states that "[t]he network interface 340 may be attached to the computing device that implements the voice over IP gateway. The ECAN 312, codec 316, VAD 320, and packetizer 324 may provide outputs, as shown, that are transmitted back to the voice analysis platform 304. The voice analysis platform 304 may subsequently generate one or more voice quality scores by comparing one or more of these outputs, containing the captured reference speech sample, to the originally transmitted reference speech sample."

Independent Claim 41

Independent Claim 41 is directed to:

41.   A method of assessing voice quality at various points along a communication system comprising:

transmitting a reference speech from a first voice analysis platform to a second voice analysis platform via at least one gateway;

monitoring an output of a plurality of signal processing elements of said at least one gateway;

transmitting a reference speech sample from said output to said first voice analysis platform or said second voice analysis platform; and

using said reference speech sample to generate a voice quality score by said first voice analysis platform or said second voice analysis platform.

Figures 1a, 1b, 3 and 5 illustratively describes at least one voice analysis platform used for assessing voice quality of a communication system. The present Application, at paragraph [23], further states that the "present invention may be found in a system and method to assess voice quality of a communication system." Furthermore, paragraph [24] describes how a voice analysis platform is used to assess the voice quality. For example, paragraph [24], states that "[t]he voice analysis platform provides streaming voice data in the form of one or more reference speech samples that are injected and captured at various points within a communication system. The capture points comprise outputs of one or more processing elements of the communication system. The reference speech samples may comprise prerecorded utterances that may be stored in a storage media of the voice analysis platform. It is contemplated that, in one embodiment, the utterances may be generated in one or more different languages. The voice analysis

platform utilizes one or more algorithms to generate a voice quality score from the captured voice data."

The subject matter of the first clause of Claim 41 is illustratively described in the present Application, at Figure 1a, for example. For example, Figure 1a clearly shows a first voice analysis platform transmitting a reference speech sample to a second voice analysis platform via at least one gateway. Furthermore, for example, paragraph [25] of the present Application states that "[t]he first voice analysis platform 104 may transmit one or more reference speech samples to an exemplary first public switched telephone network (PSTN) subnetwork 108, and an exemplary first voice over IP gateway 112." Furthermore, for example, the present Application, at paragraph [25], states that "[t]he second voice analysis platform 128 is used to receive the transmitted one or more reference speech samples from the public/private network 116 and perform one or more types of analyses."

Claim 41 further recites "monitoring an output of a plurality of signal processing elements of said at least one gateway; transmitting a reference speech sample from said output to said first voice analysis platform or said second voice analysis platform; and using said reference speech sample to generate a voice quality score by said first voice analysis platform or said second voice analysis platform." This portion of Claim 41 is illustratively described in the present Application, at Figures 3 and 5, for example. Figure 3, for example, illustrates how a first voice analysis platform receives a speech sample from an output of a signal processing element of a plurality of signal processing elements (i.e., a 1st echo canceller 312, a voice activity detector 320, a 1st codec 316, and a packetizer 324). Furthermore, for example, paragraph [39] of the present Application

states that "[a] network interface 340 is illustrated on the transmit side of the voice communication system under test. The network interface 340 provides a communication interface between the exemplary processing elements previously described (i.e., ECAN 312, codec 316, VAD 320, and packetizer 324) and the voice analysis platform 304. The network interface 340 may be attached to the computing device that implements the voice over IP gateway. The ECAN 312, codec 316, VAD 320, and packetizer 324 may provide outputs, as shown, that are transmitted back to the voice analysis platform 304. The voice analysis platform 304 may subsequently generate one or more voice quality scores by comparing one or more of these outputs, containing the captured reference speech sample, to the originally transmitted reference speech sample." Furthermore, for example, paragraph [46] of the present Application, states that "[a] second network interface 364 is illustrated on the receive side of the voice communication system under test. The network interface 364 provides a communication interface between the exemplary VoIP gateway processing elements and the voice analysis platform 304. The receive side voice over IP gateway may facilitate transmitting one or more outputs from the second ECAN 356, second codec 352, CNG 348, and jitter buffer 344, as shown in Figure 3,back to the second voice analysis platform 368, where a voice quality score maybe generated. Further, the output of the second WAN service interface 338 may be ported through the second network interface 364 to the second voice analysis platform 368. The voice analysis platform 368 may subsequently generate one or more voice quality scores based on the one or more reference speech sample output(s) it receives from the voice communication system under test." Thus, this portion of the claimed

subject matter is adequately described in Figures 3 and 5, and paragraphs [39] and [46],

for example.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

I. Claims 11, 19-20, 29-30, 40-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Goodman (US 7,173,910).

ARGUMENT

In summary, the Appellants respectfully submit that the Board should reverse the rejections to the pending claims. Appellants respectfully submit that the pending claims should be allowed because these claims contain patentable subject matter. Appellants have argued the claims in each ground of rejection separately, instead of as a group, as follows.

I.   **REJECTION OF CLAIMS 11, 19-20, 29-30, 40-41 UNDER 35 U.S.C. § 102(e)**

A.   **Independent Claim 19**

Claim 19 is directed to:

A system for monitoring degradation of voice quality in a communication system comprising:

a first voice analysis platform for transmitting reference speech through said communication system; and

a second voice analysis platform for receiving said reference speech transmitted through said communication system, said communication system comprising a plurality of signal processing elements used to process said reference speech, wherein a network interface is used to communicatively couple the outputs of said plurality of signal processing elements to said first voice analysis platform or said second voice analysis platform, wherein a reference speech sample obtained at an output of a signal processing element of said plurality of signal processing elements is transmitted through said network interface to said first voice analysis platform or said second voice analysis

platform, said reference speech sample obtained at said output used to compute a voice

quality score at said first voice analysis platform or said second voice analysis platform.

In the final Office Action dated 11/20/2009, the Examiner states:

> "wherein a network interface (such as 'telephone interfaces', or 'IP interface') is used to communicatively couple ('connect') the outputs of said plurality of signal processing elements to said first voice analysis platform or said second voice analysis platform (such as 'test probes': TP, TPI TP2, TP3)" (Fig.2 and col. 6, lines 1-32; also see Fig.5 and col. 9, lines 22-44),

Appellants disagree with Examiner's conclusory statement. Goodman, at Figure

2, and at col. 6, lines 1-32 describes and illustrates various test probes (TP, TP1, TP2,

TP3) which "can connect to PSTNs through telephone interfaces for end-to-end voice

quality testing." Thus, as illustrated in Goodman, at Figure 2, a test probe may connect to

a Public Switched Telephone Network (PSTN) by way of a telephone interface.

However, there is no teaching of "wherein a network interface is used to

communicatively couple the outputs of said plurality of signal processing elements to

said first voice analysis platform," as recited in Claim 19. There is no such network

interface for communicatively coupling the outputs of a plurality of signal processing

elements (used to process reference speech) to the first voice analysis platform or the

second voice analysis platform, as recited in Claim 19. While the Examiner has mapped

each of Goodman's test probes to each of the first voice analysis platform and the second

voice analysis platform, Goodman does not teach an interface being used to

communicatively couple an output of a signal processing element back to the first or

second voice analysis platforms. Contrary to what the Examiner alleges, Goodman does

not teach anything about a network interface that connects the outputs of a plurality of signal processing elements back to either a first voice analysis platform (as the Examiner maps to one of Goodman's test probes) or a second voice analysis platform (mapped by another one of Goodman's test probes). For illustrative reasons, the Appellants request the Board to consider Fig. 3 of the present Application which illustrates how the recited network interface connects the outputs of a plurality of signal processing elements back to either a first voice analysis platform or a second voice analysis platform (as the Examiner has mapped to of two Goodman's test probes). Furthermore, the Appellants submit that Goodman teaches placing several test probes at any point along the network which requires a voice quality test. Therefore, unlike what is recited in Claim 19, Goodman teaches away from "wherein a network interface is used to communicatively couple the outputs of said plurality of signal processing elements to said first voice analysis platform or said second voice analysis platform, wherein a reference speech sample obtained at an output of a signal processing element of said plurality of signal processing elements is transmitted through said network interface to said first voice analysis platform or said second voice analysis platform, said reference speech sample obtained at said output used to compute a voice quality score at said first voice analysis platform or said second voice analysis platform," as recited in Claim 19. Unlike what is recited in Claim 19, none of Goodman's test probes receives "outputs of a plurality of signal processing elements." For at least the foregoing reasons, Claim 19 contains patentable subject matter that should be allowed.

The Examiner, at page 4 of the final Office Action, further alleges that:

"wherein a reference speech sample ('reference voice file' that is

played back) obtained at an output of a signal processing element
(one of 'text probes' acting as 'a resource to transmit the file') of
said plurality of signal processing elements is transmitted through
said network interface (such as 'telephone interfaces', or 'IP
interface') to said first voice analysis platform or said second voice
analysis platform (one of 'text probes' acting as 'a resource to
receive the file')", (Fig.2 and col. 3, line 28 to col. 4, lines 18 and
col. 6, lines 1-32; also see Fig.5 and col. 9, lines 22-44; col. 6,
lines10-63, 'end-to-end scores', 'border-to-end (or border) scores',
'the voice quality measurements ... can be end-to-edge or edge-to-
edge', which implies obtaining the reference speech at a measured
point/place that reflects an output of the corresponding signal
processing element),

While the Examiner believes he has shown a teaching of this portion of Claim 19,

he has not shown how an output of a plurality of signal processing elements is sent back

to a voice analysis platform so that a voice quality score may be computed. Instead,

Goodman teaches how a test probe may be used to compute a voice quality score at a

point on the network in which the test probe is connected. Therefore, rather than using a

network interface "to communicatively couple the outputs of said plurality of signal

processing elements to said first voice analysis platform or said second voice analysis

platform," Goodman teaches that a test probe (or voice analysis platform) needs to be

connected to the point in which a voice quality score is to be computed. Therefore,

Goodman's invention requires numerous test probes scattered within a network as

illustratively shown in Figure 2. Goodman differs from what is recited in Claim 19

because Goodman does not teach how two end-to end voice analysis platforms may be

used to compute a voice quality score at various outputs of a plurality of signal

processing elements between the two voice analysis platforms. There is no teaching in

Goodman of how "said reference speech sample obtained at said output used to compute

a voice quality score at said first voice analysis platform or said second voice analysis

platform. For at least the foregoing reasons, Claim 19 contains patentable subject matter that should be allowed.

Therefore, the final Office Action has misinterpreted what is disclosed in Goodman, in an attempt to show a teaching of Claim 19. The final Office Action does not show a teaching of each and every element recited in Claim 19. Therefore, Appellants request a reversal of the rejection to Claim 19. Furthermore, Claims 20-29 should be allowed for at least the reason that these claims depend on an allowable Claim 19. Furthermore, Claims 20-29 should be allowed for at least the reason that these claims depend on an allowable independent Claim 19.

B.   Dependent Claim 20

Claim 20 is directed to:

The system of Claim 19 wherein said signal processing element comprises a codec.

The final Office Action, at page 5, states:

> As per claim 20 (depending on claim 19), as stated above, GOODMAN discloses "said signal processing element comprises a codec" (see rejection for claim 1 above).

Appellants have reviewed the rejection to Claim 1; however, there is nothing in the rejection for Claim 1, as alleged by the Examiner, which shows a teaching of "said signal processing element comprises a codec." Thus, for at least this reason, the Appellants believe that Claim 1 contains patentable subject matter.

C.   Dependent Claims 29 and 40

Claim 29 is directed to:

The system of Claim 19 wherein said first voice analysis platform comprises a software module, said software module comprising software that provides configuration data to a gateway, said gateway comprising said one or more signal processing elements, said configuration data used in selecting said output from said outputs for computing said voice quality score at said first voice analysis platform or said second voice analysis platform.

Claim 40 is directed to:

The system of Claim 30 wherein said voice analysis platform comprises a software module, said software module comprising software that provides configuration data to a gateway, said gateway comprising said one or more signal processing elements, said configuration data used in determining said selected output from one or more outputs corresponding to said one or more signal processing elements.

In the final Office Action, the Examiner alleges Goodman teaches Claim 29. The Examiner states:

> As per claim 29 (depending on claim 19), GOODMAN further discloses:
>
> "said first voice analysis platform comprises a software module, said software module comprising software that provides configuration data to a gateway", (col. 3, lines 32-36, col. 4, lines [sic] 12 to col. 5, line 56, 'test probes store a software algorithm (software module) implementing a perceptual or voice all [sic] listening quality test model' that 'is performed for each level of service' based on 'both codec (signal processing element) and IP signaling protocol (configuration data)' corresponding to one of the

assigned unique telephone numbers (also read on configuration data in broad sense) that is called (provided) to a gateway, 'gateway is configured with resources to perform both types of coding and signal, but selects the appropriated coding for the call to test probe ... ", wherein anyone or more of 'level of service', 'one or more coding schemes', 'protocols' and 'codecs' corresponding the communications device' and 'gateway' can be read on configuration data; also see Figs. 1 and 4),

"said gateway comprising one or more signal processing elements" (col. 4, lines 1218, 'codec (i.e. coder/decoder) (interpreted as one or more signal processing elements), used by 'VOIP communication device' such as 'gateways' that implement one or more coding schemes (also read on signal processing elements) to support voice encoding/decoding'; Fig. A, wherein the data (telephone#, service level (or protocol) and routing info.) in the gateway configuration table can also be read on configuration data or signal processing elements),

"said configuration data used in selecting output from said outputs for computing said voice quality score at said first voice analysis platform or said second voice analysis platform" (col. 5, lines 17-25, 'gateway is configured with resources to perform both types of coding and signaling (configuration data)', 'the gateway 16a determines from the service level information associated with the called phone number (selected outputs)'; also see above, col. 4, lines 12 to col. 5, line 56).

Based on the foregoing, the Examiner believes that an "IP signaling protocol" teaches "configuration data," as recited in Claim 29. The Appellants firmly disagree because a signaling protocol does not teach "configuration data." Furthermore, a protocol does not teach anything about "configuration data." While the Examiner references Goodman, at col. 4, line 12 to col. 5, line 56, the Appellants submit that H.323 and SIP correspond to signaling protocols which do not teach anything about "configuration data used in selecting said output from said outputs for computing said voice quality score at said first voice analysis platform or said second voice analysis

platform," as recited in Claim 29. Thus, for at least this reason, Claim 29 should be allowed.

Appellants also disagree that "one of the assigned unique telephone numbers" also reads on configuration data in a "broad sense" as alleged by the Examiner. Goodman describes how a telephone number can be used to determine a level of service based on type of codec and signaling protocol. Thus, a unique telephone number has nothing to do with "configuration data used in selecting said output from said outputs for computing said voice quality score at said first voice analysis platform or said second voice analysis platform," as recited in Claim 29. Thus, for at least this reason, Claim 29 should be allowed.

The Examiner further alleges that "col. 4 lines 1218 [sic] teaches a "gateway comprising said one or more signal processing elements." However, Appellants do not see where within Goodman, at column 4, there is any teaching of a "gateway comprising said one or more signal processing elements," as recited in Claim 29. Thus, for at least this reason, Claim 29 should be allowed.

The Examiner further alleges that a "gateway configuration table" teaches a "configuration data used in selecting said output from said outputs for computing said voice quality score at said first voice analysis platform or said second voice analysis platform," as recited in Claim 29. Appellants disagree because Goodman's configuration table contains a telephone number, an associated codec standard (e.g., G.711, G.723, and G.729), and routing information specification a destination gateway, which does not teach anything about "configuration data used in selecting said output from said outputs for computing said voice quality score at said first voice analysis platform or said second

voice analysis platform," as recited in Claim 29. Thus, for at least this reason, Claim 29 should be allowed.

Thus, based on the foregoing explanations, the Examiner has not shown a teaching of each and every element recited in Claim 29. Therefore, the Appellants request a reversal of this rejection.

Since the Examiner has stated that Claim 40 has been rejected based on the same reason described for Claim 29, the Appellants request the Board to consider Appellant's foregoing arguments for Claim 29. For at least these reasons, Claim 40 is in condition for allowance.

D.   Independent Claim 11

Claim 11 is directed to:

A method of assessing voice quality of a communication system using a voice analysis platform comprising:

transmitting reference speech samples into said communication system;

receiving said reference speech samples captured at one or more processing points within a gateway of said communication system; and

determining voice quality scores based on said captured reference speech samples using said voice analysis platform.

At page 7 of the final Office Action, the Examiner states:

> As per claim 11, it recites a method. The rejection is based on the same reason described for claim 19, because it also reads on the limitations of claim 11.

Since the Examiner has stated that Claim 11 has been rejected based on the same reason described for Claim 19, the Appellants request the Board to consider Appellant's arguments for Claim 19, as previously presented in this Brief on Appeal. For at least these reasons, Claim 11 is in condition for allowance.

Furthermore, the final Office Action does not show a teaching of "receiving said reference speech samples captured at one or more processing points within a gateway of said communication system," as recited in the second clause of Claim 11. While Goodman may display a number of gateways (GW) scattered throughout a network (see Goodman, at Figure 2, for example), Goodman does not teach anything about capturing reference speech samples at *one or more processing points within a gateway* of a communication system. While Goodman, at Figure 2, may disclose a gateway (GW), there is nothing that teaches or discloses anything about processing points within a gateway. Therefore, for at least this reason, Claim 11 should be passed to allowance. Furthermore, Claims 12-13, 15-17, and 49-54 should be allowed for at least the reason that these claims depend on an allowable independent Claim 41.

E. Independent Claim 30

Claim 30 is directed to:

A system for monitoring degradation of voice quality in a communication system comprising:

a voice analysis platform for transmitting and receiving reference speech through said communication system, said communication system comprising a plurality of signal processing elements used to process said reference speech, said voice analysis platform

receiving a reference speech sample from an output of a signal processing element of said plurality of signal processing elements, said reference speech sample transmitted to said voice analysis platform via a network interface, said network interface used for communicatively coupling said signal processing element to said voice analysis platform, said reference speech sample used to compute a voice quality score.

At page 7 of the final Office Action, the Examiner states:

> As per claim 30, the rejection is based on the same reason described for claim 19, because it also reads on the limitations of claim 30.

Since the Examiner has stated that Claim 30 has been rejected based on the same reason described for Claim 19, the Appellants request the Board to consider Appellant's arguments for Claim 19, as previously presented in this Brief on Appeal. For at least these reasons, Claim 30 is in condition for allowance.

Appellants maintain that the Examiner has not shown a teaching of each and every element recited in "said voice analysis platform receiving a reference speech sample from an output of a signal processing element of said plurality of signal processing elements, said reference speech sample transmitted to said voice analysis platform via a network interface, said network interface used for communicatively coupling said signal processing element to said voice analysis platform," as recited in independent Claim 30. For at least these reasons, Claim 30 is in condition for allowance. Furthermore, Claims 31-40 should be allowed for at least the reason that these claims depend on an allowable independent Claim 30.

F.   Independent Claim 41

Claim 41 is directed to:

A method of assessing voice quality at various points along a communication system comprising:

transmitting a reference speech from a first voice analysis platform to a second voice analysis platform via at least one gateway;

monitoring an output of a plurality of signal processing elements of said at least one gateway;

transmitting a reference speech sample from said output to said first voice analysis platform or said second voice analysis platform; and

using said reference speech sample to generate a voice quality score by said first voice analysis platform or said second voice analysis platform.

Since the Examiner has stated that Claim 41 has been rejected based on the same reason described for Claim 19, the Appellants request the Board to consider Appellant's arguments for Claim 19, as previously presented in this Brief on Appeal. For at least these reasons, Claim 41 is in condition for allowance.

While the Examiner indicates that Claim 41 recites similar limitations as Claim 19, the Appellants disagree. For example, the Appellants submit that Claim 41 recites "monitoring an output of a plurality of signal processing elements of said at least one gateway" which is not recited in Claim 19. Thus, the Examiner has not shown a teaching

of each and every element of "monitoring an output of a plurality of signal processing elements of said at least one gateway," as recited in Claim 41.

Thus, for at least the foregoing reasons, the Appellants request reversal of the rejection to Claim 41. Furthermore, Claims 42-48 should be allowed for at least the reason that these claims depend on an allowable independent Claim 41.

CLAIMS APPENDIX

The following claims are involved in this Appeal:

11.   A method of assessing voice quality of a communication system using a voice analysis platform comprising:

transmitting reference speech samples into said communication system;

receiving said reference speech samples captured at one or more processing points within a gateway of said communication system; and

determining voice quality scores based on said captured reference speech samples using said voice analysis platform.

12.   The method of Claim 11 further comprising displaying said voice quality scores graphically using said voice analysis platform.

13.   The method of Claim 12 wherein said displaying occurs by way of a graphical user interface.

15.   The method of Claim 11 further comprising determining and displaying statistical information related to said voice quality scores using said voice analysis platform.

16.   The method of Claim 15 wherein said statistical information comprises an average voice quality score and a variance.

17.   The method of Claim 11, wherein said gateway comprises a voice over IP gateway.

19.   A system for monitoring degradation of voice quality in a communication system comprising:

a first voice analysis platform for transmitting reference speech through said communication system; and

a second voice analysis platform for receiving said reference speech transmitted through said communication system, said communication system comprising a plurality of signal processing elements used to process said reference speech, wherein a network interface is used to communicatively couple the outputs of said plurality of signal processing elements to said first voice analysis platform or said second voice analysis platform, wherein a reference speech sample obtained at an output of a signal processing element of said plurality of signal processing elements is transmitted through said network interface to said first voice analysis platform or said second voice analysis platform, said reference speech sample obtained at said output used to compute a voice quality score at said first voice analysis platform or said second voice analysis platform.

20.   The system of Claim 19 wherein said signal processing element comprises a codec.

21.   The system of Claim 19 wherein said signal processing element comprises a voice activity detector.

22.   The system of Claim 19 wherein said signal processing element comprises an echo canceller.

23.   The system of Claim 19 wherein said signal processing element comprises a packetizer.

24.   The system of Claim 19 wherein said signal processing element comprises a jitter buffer.

25.   The system of Claim 19 wherein said signal processing element comprises a comfort noise generator.

26.   The system of Claim 19 wherein said voice quality score comprises PESQ.

27.   The system of Claim 19 wherein said voice quality score comprises PAMS.

28.   The system of Claim 19 wherein said voice quality score comprises PSQM.

29.   The system of Claim 19 wherein said first voice analysis platform comprises a software module, said software module comprising software that provides configuration data to a gateway, said gateway comprising said one or more signal

processing elements, said configuration data used in selecting said output from said outputs for computing said voice quality score at said first voice analysis platform or said second voice analysis platform.

30. A system for monitoring degradation of voice quality in a communication system comprising:

a voice analysis platform for transmitting and receiving reference speech through said communication system, said communication system comprising a plurality of signal processing elements used to process said reference speech, said voice analysis platform receiving a reference speech sample from an output of a signal processing element of said plurality of signal processing elements, said reference speech sample transmitted to said voice analysis platform via a network interface, said network interface used for communicatively coupling said signal processing element to said voice analysis platform, said reference speech sample used to compute a voice quality score.

31. The system of Claim 30 wherein said signal processing element comprises a codec.

32. The system of Claim 30 wherein said signal processing element comprises a voice activity detector.

33. The system of Claim 30 wherein said signal processing element comprises an echo canceller.

34.   The system of Claim 30 wherein said signal processing element comprises a packetizer.

35.   The system of Claim 30 wherein said voice quality score comprises PESQ.

36.   The system of Claim 30 wherein said voice quality score comprises PAMS.

37.   The system of Claim 30 wherein said voice quality score comprises PSQM.

38.   The system of Claim 30 wherein said signal processing element comprises a jitter buffer.

39.   The system of Claim 30 wherein said one or more signal processing elements comprises a comfort noise generator.

40.   The system of Claim 30 wherein said voice analysis platform comprises a software module, said software module comprising software that provides configuration data to a gateway, said gateway comprising said one or more signal processing elements, said configuration data used in determining said selected output from one or more outputs corresponding to said one or more signal processing elements.

41.   A method of assessing voice quality at various points along a communication system comprising:

transmitting a reference speech from a first voice analysis platform to a second voice analysis platform via at least one gateway;

monitoring an output of a plurality of signal processing elements of said at least one gateway;

transmitting a reference speech sample from said output to said first voice analysis platform or said second voice analysis platform; and

using said reference speech sample to generate a voice quality score by said first voice analysis platform or said second voice analysis platform.

42.   The method of Claim 41 further comprising displaying said voice quality score graphically.

43.   The method of Claim 42 wherein said displaying occurs by way of a graphical user interface.

44.   The method of Claim 41 further comprising determining and displaying statistical information related to said voice quality score.

45.   The method of Claim 44 wherein said statistical information comprises an average voice quality score and one or more variances.

46.   The method of Claim 41 wherein said voice quality score is generated using a PESQ algorithm.

47.   The method of Claim 41 wherein said voice quality score is generated using a PAMS algorithm.

48.   The method of Claim 41 wherein said voice quality score is generated using a PSQM algorithm.

49.   The method of Claim 11 wherein said one or more processing points comprises a codec.

50.   The method of Claim 11 wherein said one or more processing points comprises a voice activity detector.

51.   The method of Claim 11 wherein said one or more processing points comprises an echo canceller.

52.   The method of Claim 11 wherein said one or more processing points comprises a packetizer.

53.   The method of Claim 11 wherein said one or more processing points comprises a jitter buffer.

54.   The method of Claim 11 wherein said one or more processing points comprises a comfort noise generator.

EVIDENCE APPENDIX
(37 C.F.R. § 41.37(c)(1)(ix))

Not applicable.

RELATED PROCEEDINGS APPENDIX
(37 C.F.R. § 41.37(c)(1)(x))

The Appellants are unaware of any related appeals or interferences.

CONCLUSION

For at least the foregoing reasons, the Appellants submit that the pending claims are allowable in all respects. Reversal of the Examiner's rejections and issuance of a patent on the present Application are therefore requested from the Board.

PAYMENT OF FEES

The Commissioner is hereby authorized to charge $540 (to cover the Brief on Appeal Fee) and any additional fees or credit any overpayment to the deposit account of McAndrews, Held & Malloy, Account No. 13-0017.

Dated: May 24, 2010   Respectfully submitted,

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